Photosynthetic solar controller
User manual

Main features:

1, Using SCM and dedicated software, enables intelligent control;

2, By rate of battery discharge characteristic accurately, as amended by discharge control. Final discharge voltage is determined by discharging rate curve control points of the amendments, eliminating mere inaccuracy of voltage controlled amplifier, comply with the inherent characteristics of the battery, that is, different ending of discharge rate with different voltages.

3, With over charge, over discharge, electronic overload protection, short circuit, a unique anti-reverse protection automatic control; protection does not damage any part of the above, no fire insurance;

4, Uses the series PWM Charger main circuit, the charging circuit voltage loss charging circuit of diodes reduced by almost half, charging efficiency than PWM High 3%-6% , Increased electricity time; improving the recovery of the charge, the normal straight full, floating automatic control mode causes the system to have a longer service life; at the same time with high accuracy temperature compensation;

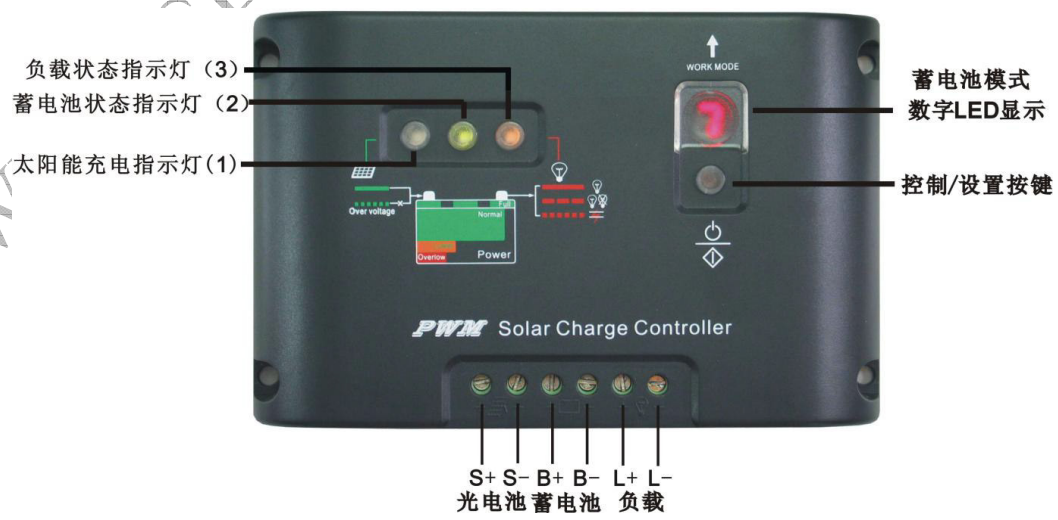
5And intuitive LED Led indicates the current battery State, so that the users understand usage;

6, All of the controls used in all industrial-grade chip (only for I Industrial controller), in the cold, hot, humid environment to run freely. While using the crystal oscillator timing control, precision control of timing;

7Cancellation of potentiometer control set-point, and use the Flash Memory records the control point, for the settings to digital, eliminated by potentiometer vibration displacement, make control points appear such as drift error reduced accuracy, the reliability factor;

8, The use of digital LED Display and set, one-click operation can complete all settings, with easy and intuitive,

9All seal completely water-proof (-S) Has completely waterproof performance.



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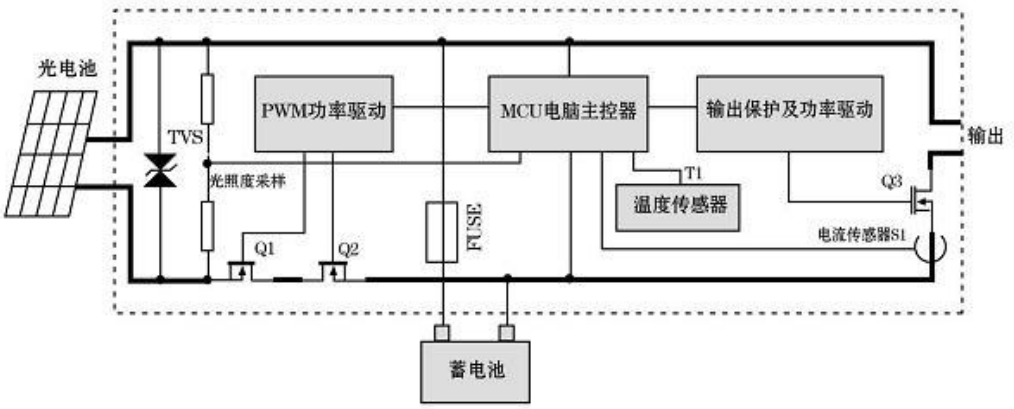
System Description:

This controller is designed for DC power supply system of solar energy, solar-powered direct current street lamp system design, and use special intelligent controller for computer chips. One-click tact switch, complete all the actions and settings. With short circuit, overload, unique anti-reverse connection protection, full, automatic shutdown, restored full protection measures, detailed charge indicates, battery status, load and fault indication. This controller through computer chip on battery of end voltage, and discharge current, and environment temperature, involved battery capacity of parameter for sampling, through dedicated control model calculation, implementation meet battery characteristics of discharge rate, and temperature compensation amendment of efficient, and high accurate rate control, and used has efficient PWM battery of charging mode, guarantee battery work in best of State, greatly extended battery of using life. With multiple operating mode, the output mode selected to meet user needs.



Installation and use:

1, Controllers, fixed to a solid, high current models require to ensure the vents to ensure heat dissipation.

Overall dimensions: 140 × 90.5 (mm)
Mounting hole size: 133.5 × 70(mm)

2, And the preparation of the wire: wire stranded copper conductor insulation is recommended. First determine the wire length, in the case of guarantee the installation location, minimizing the line length to reduce power loss. According to Max 4A/mm2 selection of current density copper wire cross-sectional area, the controller on one side of the line head stripped 5mm of insulation.

3, First connected controller battery terminals, and on the other end attached to the battery, note + ， — Do not reverse. If connected correctly, the led (2) should be on, press the keys to check. Otherwise, check whether you want. In case of reverse will not fire

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insurance and damage to the controller any parts. Fuses only as a final circuit controller itself damaged short circuit protection.

4, Conductors, connections, solar cell, first connect to the controller glazing the terminals of the battery, and then connect the other end to light on the battery, note + ， — Do not reverse, if there is sunshine, charging light should be on. Otherwise, check whether you want.

5, Load connections, load on the load line access controller the output, note + ， — Do not reverse to avoid burn out appliances.

6, Then light conductors should be at the bottom terminal of the battery and load one radian prevent rain along the wire into the controller.

Instructions for use:

Charging and overpressure indicates: Dang system connection normal, and has Sun irradiation to light battery plate Shi, charging led (1) for green often lit, said system charging circuit normal; Dang charging led (1) appears green fast Flash Shi, description system had voltage, processing see fault processing content; charging process using has PWM way, if occurred had placed action, charging first to reached upgrade charging voltage, and keep 10 Minutes, then fell to direct charge voltage, keeping 10 minutes to activate the battery, avoiding vulcanization mold, and finally fell to floating charge voltage and keep floating charge voltage. If it has not happened, there will be no lifting the charging method in case the battery water loss. The best automatic control process will enable battery charging effect and security or to extend its service life.

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Battery State indicates: battery voltage in normal range Shi, State led (2) for green Shine Chang; full Hou State led for green slow flash; Dang battery voltage reduced to owes pressure Shi State led became orange yellow; Dang battery voltage continues to reduced to had placed voltage Shi, State led (2) becomes red, at this time controller will automatically close output, reminded user timely supplementary power. When battery voltage recovery to normal working range automatically output open action status led (2 of) turns green;
Load indicating: When the load when opened, the load indicator (3) Shine Chang. If the load current exceeds the controller 1.25 times the rated current of 60 seconds, or the load current exceeds the controller 1.5 times the rated current of 5 seconds, the indicator (3) to red slow flashing, overload, the controller turns off the output. When the load or the load short-circuit fault occurs, the controller will immediately close the output, the indicator (3) Flash. When the above behavior occurs, users should carefully check the load connected, disconnect the faulty after loading, press the button once,30 seconds after the return to normal work, or wait until the next day to work properly.

Modes settings:

Set method: Press the switch button 5 seconds, mode (MODE) displays a number LED blinking, release the button, each press convert one number at a time, until the LED on the displayed number to the user from the table that correspond to the pattern used by digital stop key, wait until the LED digital does not flash setting is complete. Press the button once,LED digital lit, and observe that the value set.
Pure optical control mode (0): When you no sun, light intensity drops to start point, the controller delay 10 minutes after you confirm the start signal, open load, load start working; when the Sun is, light intensity rose to the launch point, controller delayed 10 minutes confirm close the output signal back to close out, load stops working.
Light + delay (1-9,0.-5.) Security: startup procedure ibid. When the load is working to set time off load and time setting shown in the following table.
General controller (6.): This method only on light control, output delay time control function, as well as the related features, keep all other functions, as a general universal controller with (that is, output on or off by pressing the control load).
Debug way (7 time.) : Used for system debugging, and pure light patterns are the same, only cancelled the judgement light signals control the output of 10min delay, keep all other features. Light signal that is connected to the load, there are optical signal switching load, convenient installation and debugging check correctness of system installation.
Output model description: When you stop LED displays, the setting mode automatically deposited MCU internal e ROM, power will not be lost, work pattern descriptions are shown in the following table:

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(Note: when selecting a **LED** digital decimal mode, the numeric decimal long, have no effect on the overall performance of the controller, will only be used for case sensitive)

Advanced BIOS features Setup tables: LED Display	Work mode	LED Display	Work mode	LED Display	Work mode
0	Optically controlled turn on + light off	6	Optically controlled opening +6 hour delay close	2.	Optically controlled opening +12 hour delay close
1	Optically controlled opening +1 hour delay close	7	Optically controlled opening +7 hour delay close	3.	Optically controlled opening +13 hours delayed close
2	Optically controlled opening +2 hour delay close	8	Optically controlled open +8 hour delay close	4.	Light open +14 hours delay to turn off
3	Optically controlled opening +3 hour delay close	9	Optically controlled open +9 hour delay close	5.	Optically controlled open +15 hour delay close
4	Optically controlled opening +4 hours delayed close	0.	Optically controlled open +10 hour delayed close	6.	Universal control modes
5	Optically controlled open +5 hours delayed close	1.	Light open +11 hour delay to turn off	7.	Debug mode

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Common symptoms and treatment:

At the time of the following situations, please follow the following checks:	Solution
No lights and displays show	Check that the battery is properly connected, connection reliability
When direct sunlight light solar panel, the Green	Check both ends of the battery power wiring is correct,
Color charge indicator (1) No lights;	Reliability of contact;
Charging indicator (1) Flash;	Overpressure system voltage. Battery open circuit, check battery Connection reliability; or charging circuit damage;
Load indicators (3) Light, but no output;	Please check using equipment is connected correctly, reliable;
Load indicators (3) Flash and no output;	Output short circuit, check the output line, after removing all the load, press the switch on, 30 Seconds after the controller and normal output;
Load LEDs (3) Slow Flash, and no output	Load power more than the rated power, decrease the electrical equipment, A push of a button, 30 Seconds back after output
Led (2) To red, and no output;	Battery discharge, automatic recovery after fully charged;

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Technical specifications:

Model	GH5A	GH10A	GH15A	GH20A
Total charge current	5A	10A	15A	20A
Total load current	5A	10A	15A	20A

System voltage	12V ; 24V/12V AUTO
Overload and short circuit protection	1.25Times of rated current 60 Second, 1.5 Times of rated current 5 Second overload protection, ≥3 Times the rated current of short circuit protection
No-load loss	≤5mA
Charging circuit voltage drop	Not more than 0.26V
Discharge circuit pressure drop	Not more than 0.15V
Overpressure protection	17V ； ×2/24V
Working temperature	Industrial grade: -35 □ To +55 □ (The suffix I ）
Upgrade charge voltage	14.6V ； ×2/24V ; (Hold time: 10min) (Discharge appears only when calling)
Direct filling charge voltage	14.4V ； ×2/24V ; (Hold time: 10min ）
Floating charge	13.6V ； ×2/24V ; (Maintenance time: until the reduced charge return voltage)
Charge return voltage	13.2V;×2/24V
Temperature compensation	-5mv/ □ /2V (Lift, direct charging, floating charge, charge return voltage compensation)
Voltage voltage	12.0V;×2/24V
Over discharge voltage	11.1V- The initial over discharge voltage discharge rate compensation amendment (no load voltage); ×2/24V
Over discharge return voltage	12.6V ； ×2/24V
Control mode	Charging for PWM Pulse width adjust

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